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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/656,606	09/05/2003	Bruno Devos	BOCK-06/119	8003
26875	7590	08/15/2006	EXAMINER	
WOOD, HERRON & EVANS, LLP 2700 CAREW TOWER 441 VINE STREET CINCINNATI, OH 45202			MOON, SEOKYUN	
			ART UNIT	PAPER NUMBER
			2629	

DATE MAILED: 08/15/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>		<b>Applicant(s)</b>	
	10/656,606		DEVOS ET AL.	
	<b>Examiner</b>		<b>Art Unit</b>	
	Seokyun Moon		2629	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 09 June 2006.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-11 and 13 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-11 and 13 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 05 September 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Response to Arguments*

1. Applicant's arguments with respect to **claims 1-11** have been considered but are moot in view of the new ground(s) of rejection.

### *Claim Rejections - 35 USC § 103*

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. **Claims 1, 2, 5, and 13** are rejected under 35 U.S.C. 103(a) as being unpatentable over Yeuan (U.S. Pat. No. 6,486,607 B1) in view of Sakamoto (U.S. Pat. No. 5,594,463).

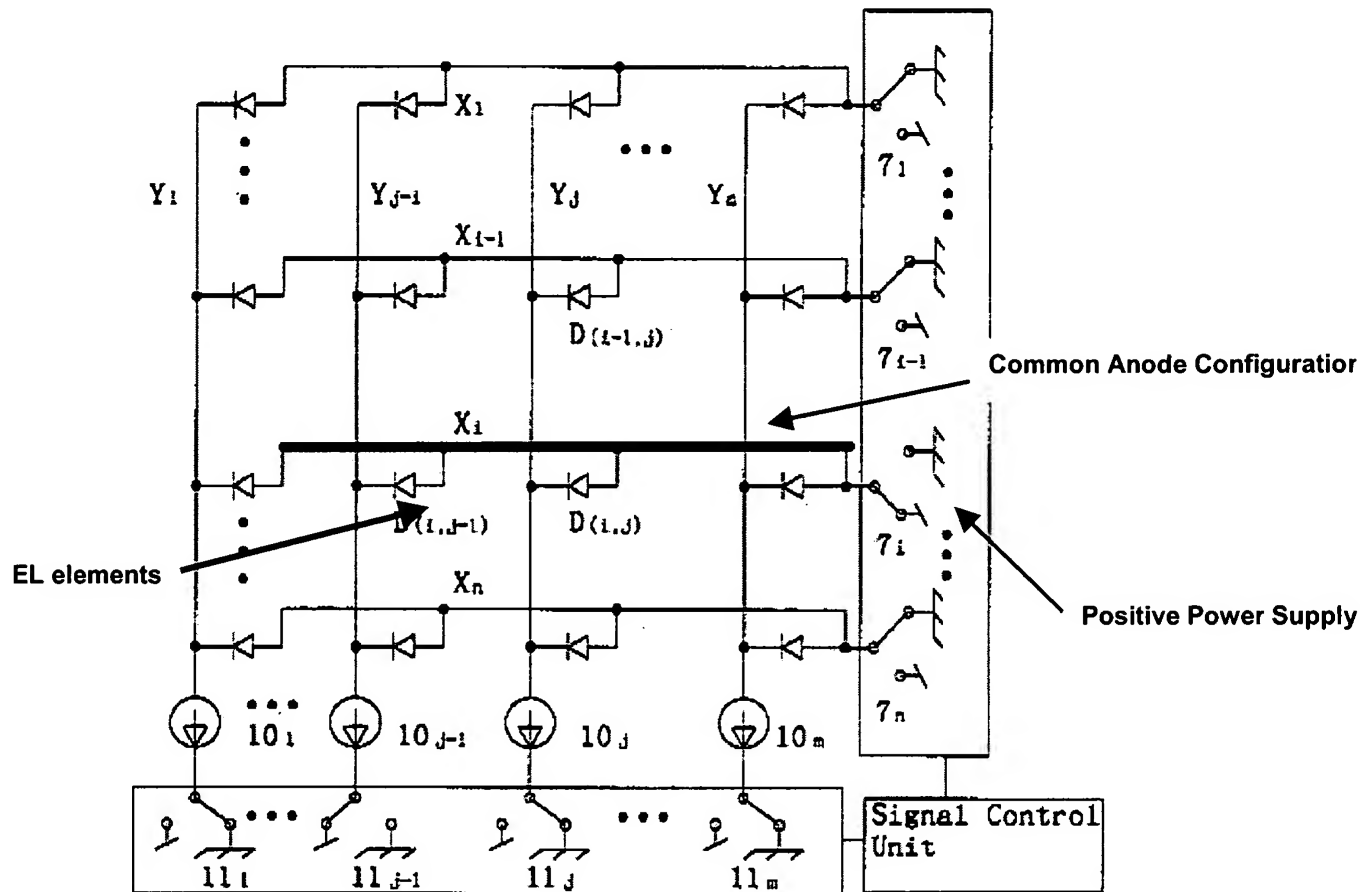
As to **claim 1**, Yeuan [figs. 7 and 10] teaches a method for controlling an electroluminescent display, said display comprising [drawing 1 provided on page 3 of this office action, which is equivalent to Yeuan's fig 10]:

a plurality of EL elements having an anode and a cathode;

said EL elements being arranged in a common anode configuration;

whereby a current source is arranged between each individual cathode of the EL elements and ground and;

the anodes of the EL elements are electrically connected in common to a positive power supply.



Drawing 1

Yeuan does not teach the method to comprise power voltage supply compensation.

However, Sakamoto teaches a display apparatus characterized in power voltage supply compensation, in which a voltage drop is measured across an EL element and wherein the measured voltage drop is used as an indicator for the light output of the EL element and wherein a power supply is adjusted in function of the measured voltage drop [col. 2 lines 18-33].

It would have been obvious to one of ordinary skill in the art at the time of the invention to implement a voltage detecting device in Yeuan and to modify Yeuan to

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change the power supplying voltage depending on the detected voltage drop, as taught by Sakamoto, in order to allow Yeuan to obtain an appropriate lighting condition of the included EL elements, even after the display device is used for a long time, thus to optimize the display function of the display [col. 1 lines 56-59].

Yeuan modified by Sakamoto does not teach the method to comprise measuring the voltage drop across the current source.

However, at the time the invention was made, it would have been an obvious matter of design choice to a person of ordinary skill in the art to measure the voltage drop across the current source instead of measuring the voltage drop across the EL elements when the current source is connected to the EL elements in series and current source and the EL elements are terminated by a voltage source and ground as shown in [Sakamoto: fig. 1 and Appl. No. 10/656,606 - fig. 2] because applicant has not disclosed that measuring the voltage drop across the current source rather than measuring the voltage drop across the EL element provides an advantage, is used for a particular purpose, or solves a stated problem. One of ordinary skill in the art, furthermore, would have expected applicant's invention to perform equally well with measuring the voltage drop across the EL element since measuring the voltage drop across the current source is eventually to measure the voltage drop across the EL element as disclosed by the applicant. [Appl. No. 10/656606 - pg 13 lines 8-12].

It would have been obvious to one of ordinary skill in the art at the time of the invention to measure the voltage drop across either one of the current source or the EL element in the modified Yeuan, since either one of the voltage drop measurements would perform equally well at indicating the light output of the EL elements.

Yeuan modified by Sakamoto does not expressly disclose the EL elements being organic light-emitting diodes.

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However, Examiner takes official notice that it is well known in the art to use organic light-emitting diodes as light-emitting elements in a display apparatus.

It would have been obvious to one of ordinary skill in the art at the time of the invention to specify the modified Yeuan to adopt organic light-emitting diodes as EL elements included in the display since organic light-emitting displays are well known for low manufacturing cost.

As to **claim 2**, Yeuan modified by Sakamoto teaches the method characterized in that the power supply is adjusted [Sakamoto: abstract lines 9-15] such that the voltage at the cathode of each organic light emitting diode is greater than or equal to a predetermined threshold voltage [Yeuan: fig. 10].

As to **claim 5**, Yeuan modified by Sakamoto [Sakamoto: fig. 5] teaches the method characterized in that the voltage drop is measured via analog-to-digital converters ("A/D converter 72") [Sakamoto: col. 7 lines 7-20].

As to **claim 13**, all of the claim limitations have already been discussed with respect to the rejection of claims 1 and 5 except for a variable power supply including a voltage regulator being operable to adjust the power supply.

Yeuan modified by Sakamoto teaches a variable power supply including a voltage regulator (Sakamoto: means for preventing the driving voltage "Vd" to be set to a value greater than the operable maximum voltage value, as disclosed in col. 7 lines 51-61] being operable to adjust the power supply as a function of the measured voltage drop [Sakamoto: col. 2 lines 18-34].

4. **Claim 3** is rejected under 35 U.S.C. 103(a) as being unpatentable over Yeuan and Sakamoto as applied to claims 1, 2, 5, and 13 above, and further in view of Kondakov et al. (U.S. Pub. No. 2004/0135749 A1, herein after referred to as "Kondakov").

Yeuan modified by Sakamoto does not teach the power compensation to be performed periodically.

However, Kondakov [par. (0009) and par. (0037) lines 1-3] teaches a method of adjusting the voltage applied across the pixels of an OLED display periodically, for compensation.

It would have been obvious to one of ordinary skill in the art at the time of the invention to specify Yeuan modified by Sakamoto to perform the power compensation periodically, as taught by Kondakov, in order to compensate degradation of the luminance of the organic light-emitting diodes continuously and periodically, thus to prevent the degradation on the image display during overall display driving period.

5. **Claim 4** is rejected under 35 U.S.C. 103(a) as being unpatentable over Yeuan and Sakamoto as applied to claims 1, 2, 5, and 13 above, and further in view of Ishizuki et al. (U.S. Pub. No. 2003/0122813 A1, herein after referred to as "Ishizuki\_1").

Yeuan modified by Sakamoto does not expressly teach the method characterized in activating the organic light-emitting diodes in a predetermined sequence in order to measure the voltage drop.

However, Ishizuki\_1 [claim 1, 3<sup>rd</sup> paragraph "a current measuring part for... to each pixel;"] teaches the method characterized in activating EL elements in a predetermined sequence ("*said emitting elements to independently emit light in succession*") in order perform the power compensation ("*drive voltage is adjusted*") [abstract. lines 3-13].

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to specify Yeuan modified by Sakamoto to activate the organic light-emitting diodes in a predetermined sequence for power compensation rather than to activate the diodes randomly, as taught by Ishizuki\_1 in order to simplify the

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operational procedure for power compensation, thus to simplify the driving circuit structure.

6. **Claims 6, 7, 8, 9, 10, and 11** are rejected under 35 U.S.C. 103(a) as being unpatentable over Yeuan and Sakamoto as applied to claims 1, 2, 5, and 13 above, and further in view of Ishizuki et al. (U.S. Pub. No. 2003/0122813 A1, herein after referred to as "Ishizuki\_2")

As to **claim 6**, Yeuan modified by Sakamoto does not teach the method characterized in that at least a number of the measured values of voltage or voltage drop are stored in a storage device for interrogation.

However, Ishizuki\_2 [claim 21] teaches a method characterized in measuring a current value by fetching the value of current flowing in power line while causing emitting elements to emit light in succession and storing the measured current values in a memory.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the modified Yeuan to measure the factor (such as "the voltage drop across the current source" for Sakamoto and "the current flowing in power line" for Ishizuki\_2) causing irregular luminance of display apparatus after long-time use and to store the factor in a memory, as taught by Ishizuki\_2, to obtain a broaden database for compensation, and thus to provide optimum power compensation to the display apparatus.

As to **claim 7**, Yeuan modified by Sakamoto does not teach the method characterized in that one or more of the current sources each co-operate with a plurality of said organic light-emitting diodes, whereby the voltage drop across such current source is measured for each of the diodes coupled to the corresponding current source by sequentially actuating these diodes.

However, Ishizuki\_2 [claim 2: 3<sup>rd</sup> par. (“a current measuring part for.... each assigned to each pixel; and”)] teaches the method of measuring current values by fetching the values of currents flowing in power line while causing emitting elements to emit light in succession.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to actuate the diodes of the combined apparatus of Yeuan and Sakamoto sequentially, in order to measure the factor (such as “*the voltage drop across the current source*” for Sakamoto and “*the current flowing in power line*” for Ishizuki\_2) causing irregular luminance of display apparatus after long-time use, for all the organic light-emitting diodes of the combined apparatus, in an organized and simplified way.

As to **claim 8**, Yeuan modified by Sakamoto fails to teach the method characterized in that the organic light-emitting diodes of the display are divided in groups, each group having its own power supply regulation, whereby the above said measurement is carried out per group and the worst case value of the measurement is used for controlling the power supply of said group.

However, Ishizuki\_2 [claim 2: 3<sup>rd</sup> par. “a current measuring part for.... each assigned to each pixel; and” and claim 27] teaches a number of emitting elements and a method comprising a number of measurements for the factor (such as “*the voltage drop across the current source*” for Sakamoto and “*the current flowing in power line*” for Ishizuki\_2) causing irregular luminance of display apparatus after long-time use for the elements and controlling the power supply (“*adjusting the voltage value of the drive voltage*”) based on the worst case value of the measurement (“*minimum measured current value*”).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to include the method of Ishizuki\_2 measuring the factor causing

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irregular luminance of display apparatus after long-time use for all emitting elements and adjusting the voltage value of the drive voltage based on the worst case value of the measurement in the modified Yeuan, in order to overcome the defects of the all EL elements caused by long-time use.

As to **claims 9 and 10**, Yeuan modified by Sakamoto and Ishizuki\_2 does not teach the method characterized in that it is used in a large-screen application, said screen being composed of a plurality of display tiles, whereby said control is applied at least individually for each of the tiles and each of the said tiles is composed of a plurality of modules and in that said control is applied individually for each of the modules.

However, the courts have held that a mere duplication of the components of the device is generally recognized as being within the level of ordinary skill in the art. St. Regis Paper Co. v. Bemis Co. Inc. 193 USPQ 8, 11 (7<sup>TH</sup> Cir. 1977).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to duplicate the display apparatus of the modified Yeuan, in order to provide a wide display screen while preventing the image degradation caused by long-time use of the display.

As to **claim 11**, Yeuan modified by Sakamoto teaches the method characterized in that a limit control is applied, whereby when a present value of maximum power of the display ("*maximum value able to be set*") or for a module dissipation is obtained for a portion in particular for a tile, said method of controlling is interrupted [Sakamoto: col. 7 lines 51-61].

### **Conclusion**

7. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

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A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Seokyun Moon whose telephone number is (571) 272-5552. The examiner can normally be reached on Mon - Fri (8:30 a.m. - 5:00 p.m.).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amr Awad can be reached on (571) 272-7764. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



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August 9, 2006

S.M.